

INTRODUCTION

This project was carried out as one of the several stages in the grassland research programme of the Imperial College of Tropical Agriculture, and in part fulfillment of the requirements for the Diploma in Tropical Agriculture.

The various stages of the programme consist firstly, of studying both selected indigenous and imported grasses, although usually the latter. Observations are taken from small trial plots in order to determine their seasonality, rate and form of growth, their flowering habits, seeding ability and fertility. At the same time, in the case of imported grasses, a study is made of the available literature from their sources of origin and other countries where they have been grown with success. This is in order to ascertain the conditions best favouring their growth and utilisation and to obtain information regarding establishment and cultural and managerial problems already encountered elsewhere. These initial trials are carried out for nearly a year, covering both the wet and the dry seasons or as much of them as is possible, taking into account the fact that most of the work is done by temporary post-graduate students in the absence of a full time Pasture Research Officer. It is to this initial stage of the work that this project belongs.

The second stage of the programme consists of selecting the most promising species, varieties, or strains, from the previous year's small plot trials and bulking them up in larger plots in order to supply enough planting material for a large scale experiment in the third year. It must be remembered that the importation of grasses from overseas is a difficult procedure especially if viable seed is not obtainable and planting material has to be imported instead; hence the necessity for at least one bulking year.

In the third stage these selected grasses are laid down in a large scale replicated trial, to determine their

productivity in terms of yield of dry matter per acre and total nutrients per acre under differing intensities of cutting. At the same time the persistence under weed encroachment, the ground cover, the ability to stand up to the various cutting treatments and the ease of eradication is noted. During this third stage which must, because of seasonal differences, be carried out for more than one year, palatability and digestibility trials are undertaken in co-operation with the Animal-husbandry department on different classes of animal.

The final stage of the programme is the laying down of trial pastures using promising grasses of previous trials, to begin with as pure stands, but later when each grass' resistance to grazing at different intensities is known, in various combinations and mixtures.

In this project it is not proposed to discuss the potential value of grass in its various forms in Trinidad as this has been ably done by such workers as Paterson (1937 and 1941), Howes and Campbell (1953), Mulholland (1953) and Evans (1954).

The great expense of the present system of soilage is obvious as is the expense of carting out the manure associated with it. It is of interest however that in the temperate regions of the United States of America, there is a movement away from the utilisation of grass by grazing toward mechanical soiling. It is claimed that the reduced spoilage and selective grazing make it economical. It must be remembered however that this system together with the mechanical soiling done in Hawaii is only suitable for fully mechanical farms and is out of the question for a peasant population, such as that in Trinidad, lacking in capital. Thus in the grassland research programme emphasis is at the moment being laid more on the grazing grasses than soilage and silage grasses.

This project is divided into two main sections. Firstly an investigation of the vegetative characteristics of the

selected grasses which includes a botanical description with drawings of each one, an account of the rate, form and seasonality of growth, flowering frequency and a short review of literature. Observations for this section were taken from small plots, made into raised beds 3' x 9' on the St. Augustine sandy loam type of soil of the old farm. The second main section is based on work done in connection with seed viability and storage tests.

Andropogon distachyoides belongs to the family *Panicoidae* which is characterised by the spikelets falling entire from their pedicels singly or in groups. The spikelets have one terminal fertile flower with a male flower below it. It belongs to the tribe *Panicaceae* which is the largest tribe of grasses with 1,300-1,400 species, mostly tropical or sub-tropical, with a few temperate species (Bawa 1929). There are nine species of the genus known in India and Tropical America, while *A. distachyoides* comes from Jamaica and is known in South Africa (Botha 1948).

Origin and Ecology:-

This grass was introduced to the Imperial College as rootstock planting material from the Research Agricultural Station at Lilongwe, Nyasaland in April 1964. It is a grass with a wide distribution in Tropical and Sub-tropical Africa, being indigenous to the Moorndrift area in the Northern Transvaal and having been found near Eldoret in Kenya, Brokenhill Southern Rhodesia, Serengeti in the marshes of the Kunene River Angola, in the Krings District of Tanganyika, and has been collected from the Libopos swamp near Mjamba at an altitude of over 5,000' and a rainfall of 40"-66". It is suitable for the more arid regions of Tanganyika (van Rooyburg 1965, Botha 1948).

A. distachyoides was established in the early 1930's at the Maitland Grass Breeding Station near Pretoria from the Moorndrift area, and disseminated a few years later to the Maitland area in the Northern Transvaal and along the Natal north coast at altitudes of 1,000'-1,500' and 25"-50" rainfall, becoming very popular in the wet belt where there is a high rainfall. It then became